# System of Systems Engineering Collaborators Information Exchange (SoSECIE)

## ****July 27, 2021**** ****11:00 a.m. to Noon Eastern Time****

### Advancements Towards a Digital Approach to Mission Engineering

***Presenters: Todd Shayler and Daniel Browne***

#### Abstract

As the Department of Defense (DoD) moves towards a Mission Engeering and Integration (MEI) approach to support investment decisions with information about the combat effectiveness of warfighter systems, the Georgia Tech Research Institute (GTRI) has explored MEI in a digital engineering context. GTRI advocates for the application of Model-Based Systems Engineering (MBSE) principles to MEI to promote processes that are repeatable, traceable, and flexible to changes in assumptions. This talk discusses two modeling frameworks, risk decomposition and Bayesian networks, and describes how the MBSE methods enable decision makers to vastly increase the number of alternatives under consideration. This allows leadership to follow the practice of Set-Based Design, keeping requirements and alternatives as open as possible for as long as possible, and helps ensure that warfighters are equipped with systems that meet the needs of their mission.

#### Biographies



Todd Shayler is a Senior Research Scientist in the Systems Engineering Research Division at GTRI. He is the Associate Head of the Applied Decision Systems Branch, where his primary area of research is the design, development, testing, and deployment of collaborative decision support systems for organizational investment strategies.



Daniel Browne is a Senior Research Engineer and Chief of the Systems Engineering Research (SER) Division at the Georgia Tech Research Institute. SER conducts research in the design and application of best practices in Model-Based Systems Engineering (MBSE) and Open Architectures, decision methods development, application of decision systems, and human systems engineering. Mr. Browne’s current research focuses on the application of MBSE and decision systems to support capability roadmap development and tradespace analysis.